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10/733,136

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Yiliang Wu

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PATENT DOCUMENTATION CENTER

XEROX CORPORATION

100 CLINTON AVE., SOUTH, XEROX SQUARE, 20TH FLOOR

ROCHESTER, NY 14644

EXAMINER

TALBOT, BRIAN K

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* YILIANG WU,  
YUNING LI and  
BENG S. ONG

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Appeal 2008-1677  
Application 10/733,136  
Technology Center 1700

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Decided: February 29, 2008

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Before BRADLEY R. GARRIS, PETER F. KRATZ, and ROMULO H.  
DELMENDO, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-25, 30, and 31. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a process comprising solution depositing a composition comprising a liquid and a plurality of metal nanoparticles with a stabilizer on a substrate to result in a semiconductive deposited composition and heating the semiconductive deposited composition to cause the metal nanoparticles to form an electrically conductive layer.

Representative independent claim 1 reads as follows:

1. A process comprising:

(a) solution depositing a composition comprising a liquid and a plurality of metal nanoparticles with a stabilizer on a substrate to result in a semiconductor deposited composition wherein the stabilizer is selected with a boiling point or decomposition temperature lower than about 250 degrees C under 1 atmosphere to result in the semiconductive deposited composition; and

(b) heating the semiconductive deposited composition to cause the metal nanoparticles to form an electrically conductive layer of an electronic device, wherein one or more of the liquid, the stabilizer, and a decomposed stabilizer is optionally part of the electrically conductive layer but if present is in a residual amount.

The references set forth below are relied upon by the Examiner as evidence of obviousness:

*Hawley's Condensed Chem. Dictionary*, 11th Ed., p. 1033 (1987).

Heath	6,103,868	Aug. 15, 2000
Murray	6,262,129 B1	Jul. 17, 2001
Griffith	6,348,295 B1	Feb. 19, 2002

All appealed claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over Griffith in combination with Heath or Murray.

Appellants' sole argument is that the claim 1 requirement "a semiconductive deposited composition" is not satisfied by Griffith because, in patentee's deposited composition, the capping group which encapsulates the nanoparticles is described as insulative (Br. 9). This argument is unpersuasive for the reasons expressed in the Answer and below.

It is correct that the capping group of Griffith's deposited composition is described as insulative (col. 3, ll. 9-13). Nevertheless, as correctly found by the Examiner, Griffith teaches that the capping groups desirably have resistivities of  $10^9$  ohms/cm or above (col. 3, ll. 28-29; Ans. 3) which fall within the range of  $10^{-2}$  to  $10^9$  ohms/cm for semiconductor resistivities (*Hawley's Condensed Chem. Dictionary*, p. 1033, 11<sup>th</sup> Ed. 1987; Ans. 5). Significantly, Appellants have not contested these findings by the Examiner. Moreover, these uncontested findings indisputably support the Examiner's determination that the deposited composition of Griffith (i.e., capping group and nanoparticles) constitutes a semiconductive deposited composition as required by claim 1.

This determination also is supported by the fact that the deposited compositions encompassed by claim 1 include the ingredients of Griffith's deposited composition. For example, the claim 1 composition includes dodecanethiol as a stabilizer (Spec., sentence bridging 5-6), and dodecanethiol is a capping group for Griffith's composition (col. 3, l. 58). Likewise, the claim 1 composition includes gold and silver as nanoparticles (see dependent claims 6-7), and these same metals are used by Griffith as nanoparticles (col. 3, ll. 16-18). Because the claim 1 compositions include

the compositions of Griffith, it is appropriate to believe that these corresponding compositions must have the same properties such as a semiconductive property. *See In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

For the reasons set forth above and in the Answer, we sustain the Examiner's § 103 rejection of all appealed claims as being unpatentable over Griffith in combination with Heath or Murray.

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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